

Composite Material, Method of Production, and Uses Thereof

Claims

1. A composite material containing a reinforcing resin and reinforcing fibers, the reinforcing fibers having a coating containing polyphenylene sulfide, characterized in that the proportion of polyphenylene sulfide relative to the uncoated reinforcing fibers is 0.001 to < 0.01 percent by weight.
2. Composite material according to Claim 1, characterized in that the proportion of polyphenylene sulfide relative to the uncoated reinforcing fibers is 0.002 to 0.009 wt.%.
3. Composite material according to Claim 1 or 2, characterized in that the coating consists of polyphenylene sulfide and a thermoplastic or duroplastic material.
4. Composite material according to one or more of Claims 1 to 3, characterized in that the reinforcing resin is a thermoplastic or a mixture of thermoplastics.
5. Composite material according to one or more of Claims 1 to 4, characterized in that the reinforcing fibers are carbon fibers of pitch, polyacrylonitrile or rayon precursors, or aramid, glass, ceramic, boron, synthetic or natural fibers, or combinations of these fibers.
6. A method for production of a composite material comprising the steps
 - a) provision of reinforcing fibers that have been pretreated if required,
 - b) application of a coating containing polyphenylene sulfide on the

reinforcing fibers of step a), such that the coating contains 0.001 to < 0.01 wt.% of polyphenylene sulfide relative to the reinforcing fibers, resulting in the production of coated reinforcing fibers, and
c) processing of the coated reinforcing fibers of step b) into a composite material, using a reinforcing resin.

7. Method according to Claim 6, characterized in that the reinforcing fibers of step a) are carbon fibers of pitch, polyacrylonitrile or rayon precursors, or aramid, glass, ceramic, boron, synthetic or natural fibers, or combinations of these fibers.
8. Method according to Claim 6 or 7, characterized in that the carbon reinforcing fibers of step a) have been pretreated by electrochemical oxidation.
9. Method according to one or more of Claims 6 to 8, characterized in that the reinforcing fibers of step a) are conducted through a bath containing a suspension of polyphenylene sulfide, dried and wound up in step b).
10. Method according to Claim 9, characterized in that the bath also contains a solution of a thermoplastic.
11. Method according to one or more of Claims 6 to 10, characterized in that the coated reinforcing fibers in step c) are processed in the form of filament yarns, short fibers, woven, braided, knitted or crocheted fabrics, nonwovens, or uni- or multidirectional scrims into a composite material.
12. Use of the composite material according to one or more of Claims 1 to 5, or of composite material produced according to one or more of Claims 6 to 11, for production of components for aircraft construction, automobile construction, machine construction or plant construction, and for production of medical components.

13. Reinforcing fibers having a coating containing polyphenylene sulfide, characterized in that the proportion of polyphenylene sulfide relative to the uncoated reinforcing fibers is 0.001 to < 0.01 wt.%.
14. Reinforcing fibers according to Claim 13, characterized in that the proportion of polyphenylene sulfide relative to the uncoated reinforcing fibers is 0.002 to 0.009 wt.%.
15. Reinforcing fibers according to Claims 13 or 14, characterized in that the coating consists of polyphenylene sulfide and a thermoplastic or duroplastic.
16. Reinforcing fibers according to one or more of Claims 13 to 15, characterized in that the reinforcing fibers are carbon fibers of pitch, polyacrylonitrile or rayon precursors, or aramid, glass, ceramic, boron, synthetic or natural fibers, or combinations of these fibers.